Supporting Information

Oscillatory Electro-oxidation of Methanol on Nanoarchitectured Pt_{pc}/Rh/Pt Metallic Multilayer

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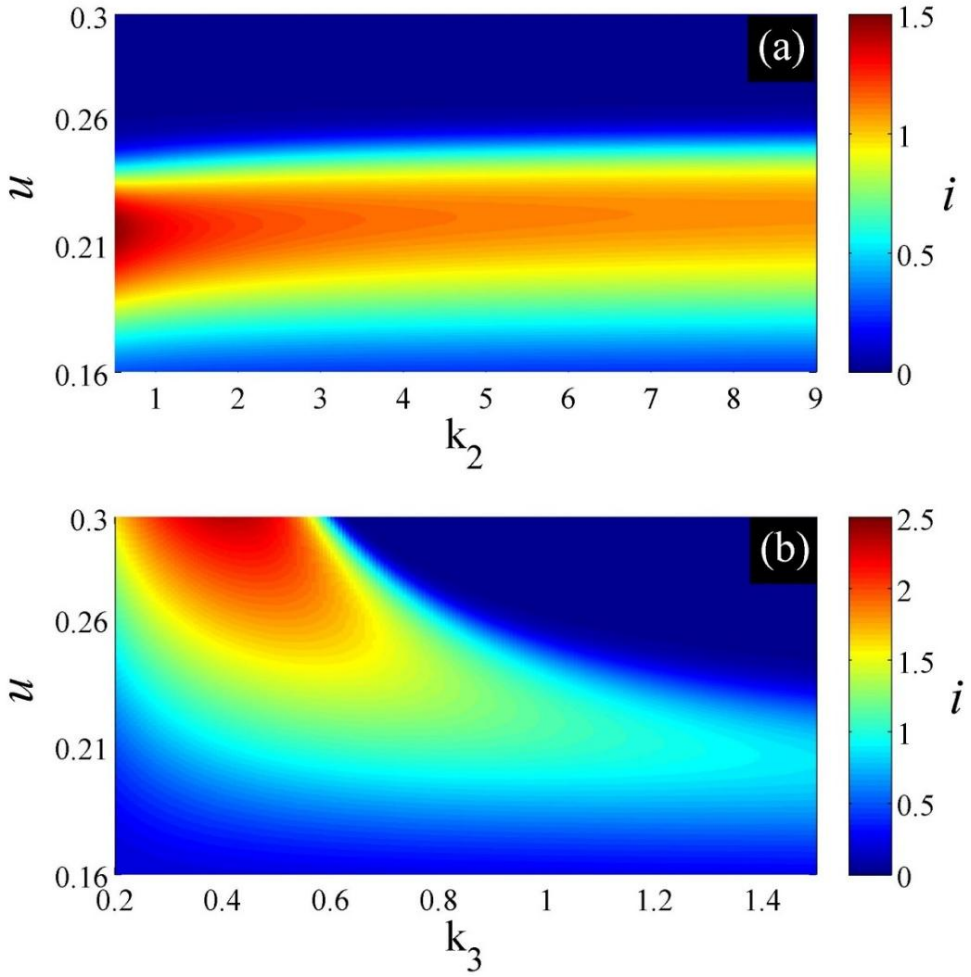

Figure S1. Effect of reaction rate constant (a) k_2 at k_3 = 1.0 and (b) k_3 at k_2 = 5.0 on the calculated current (color map) with du/dt = 0.01, $x_1(0)$ = -0.3 and $x_4(0)$ = 0.9. Additional parameters are: k_1 = 6.0, k_4 = 4.0, k_5 = 0.079, k_6 = 50, k_7 = 600, k_8 = 30, k_9 = 300, k_{10} = 0.1, ω = 15, r = 0.05.

Table S1. (a) $\Delta U_m.\Delta cycles^{-1}$ / mV.cycle^{-1}, (b) $U_{m,max}$ / V, (c) total # of cycles. All parameters were measured experimentally.

	Pt_{pc}			$Pt_{pc}/Rh_{2.0}/Pt_{1.0}$		
j / mA cm^{-2}	(a)	(b)	(c)	(a)	(b)	(c)
0.32	0.130	0.792	669	0.047	0.705	590
0.48	0.190	0.802	502	0.117	0.725	406
0.64	0.227	0.773	297	0.162	0.723	384
0.81	0.395	0.760	140	0.169	0.723	232

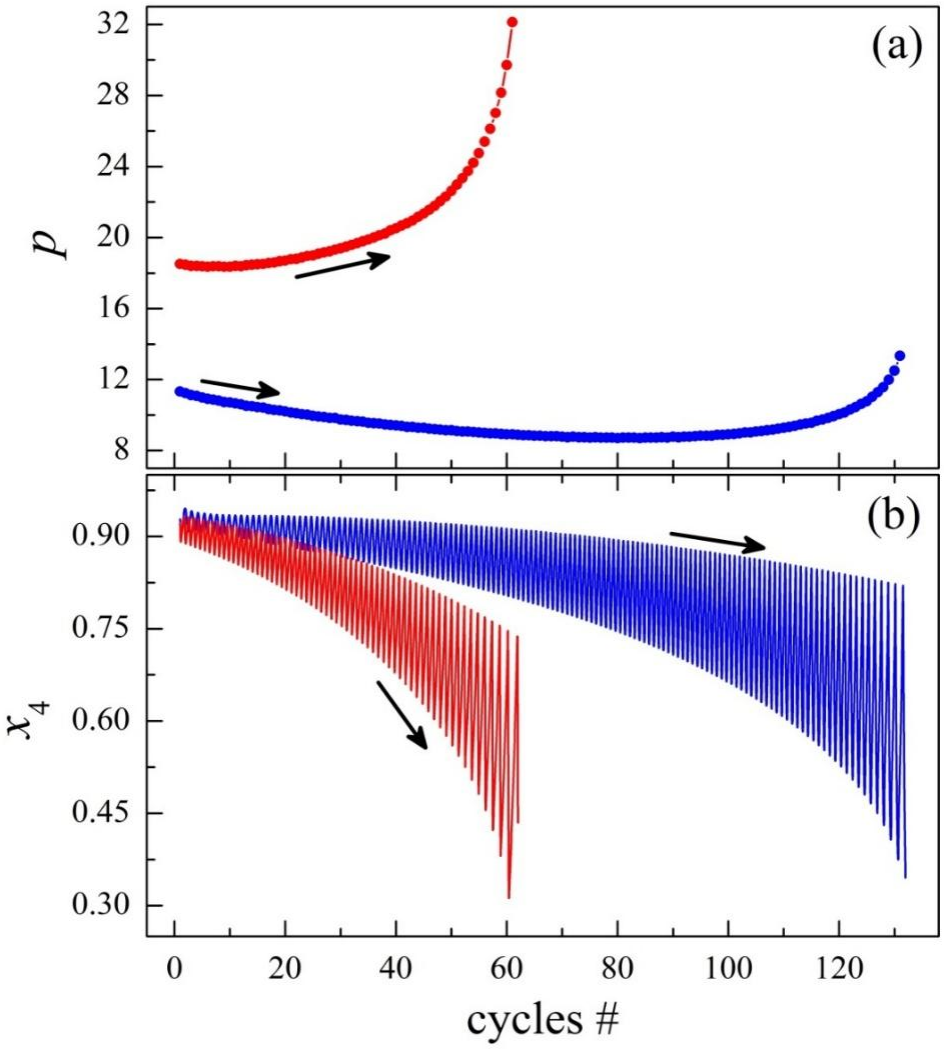

Figure S2. Simulated period and adsorbed CO coverage during potential oscillations in the electro-oxidation of methanol. k_2 = 5.0 for blue curves and k_2 = 1.0 for red ones. The black arrows indicate the direction of increasing the number of cycles from initial i of 0.05 and drift of 2.00 x 10^{-3}. Additional parameters are: k_1 = 6.0, k_3 = 1.0, k_4 = 4.0, k_5 = 0.079, k_6 = 50, k_7 = 600, k_8 = 30, k_9 = 300, k_{10} = 0.1, ω = 15.